



CAREER AND TECHNICAL EDUCATION

Operational Guide

for

Occupational and Support Program

Agricultural Science and Technology

Updated
February 14, 2005
(Course Codes and Equipment Lists)

Statement of Assurance

All vocational opportunities are offered without regard to race, color, national origin, sex, handicap, or age. The following civil rights laws protect individuals from discrimination in programs or activities receiving federal financial assistance:

Title IV of the Civil Rights Act of 1964
 Title IX of the Education Amendments of 1972
 Section 504 of the Rehabilitation Act of 1973
 Age Discrimination Act of 1975

RELATED LINK: Go to the Department of Labor for assistance with specific laws and regulations (<http://www.dol.gov/dol/compliance/compliance-majorlaw.htm>).

Summary of Dates/Forms Associated with Instructional Programs		
Date	Form # and Web Site Address	Name of Form
September 3	(http://dwe.arkansas.gov/CareerandTechEducation/TeacherInformationSystem.htm)	Computer Submission of <u>Teacher Information</u>
October 1		Notification by letter of schools using concurrent credit to meet standards
October 1	<u>WE-92</u> (http://dwe.arkansas.gov/CTESCTENewandExpandedPrograms.htm)	C & T New Program Start-up Proposals
November 12	(http://dwe.arkansas.gov/Agriculture/TeacherInfo/ProgramofActivitiesrevised2001.doc)	Computer Submission of Agriculture Education <u>Chapter Program of Activities</u>
February 4	(http://dwe.arkansas.gov/Agriculture/TeacherInfo/SAEReport02Jan04.xls)	Computer Submission of Agriculture Education <u>Supervised Agriculture Experience Report</u>
February 15 (or 10 days before first contest)		Computer Submission of Agriculture Education FFA Membership Dues
March 1	(http://dwe.arkansas.gov/Agriculture/TeacherInfo/SuperiorChapterapplicationrevised2001.doc)	Computer Submission of Agricultural Chapter <u>Superior Chapter Report</u>
March 15	<u>WE-4</u> (http://dwe.arkansas.gov/CTESCTENewandExpandedPrograms.htm)	Reimbursement for C & T New Program Equipment
June 1	(http://dwe.arkansas.gov/Agriculture/TeacherInfo/ANNUALFFAREPORT.doc)	<u>Annual FFA Report</u>
2 weeks prior to beginning of class	<u>WE-6</u> (http://dwe.arkansas.gov/CTESCTEReporting%20Forms.htm)	Application for Adult Skill Training Class (no classes will be approved after May 1)
No later than 2 weeks after completion of class	<u>WE-PD</u> (http://dwe.arkansas.gov/CTESCTEReporting%20Forms.htm)	Adult Skill Training Class Enrollment Report (all reimbursement requests must be received by May 30)

Dr. Steve Franks, Director

ARKANSAS DEPARTMENT OF WORKFORCE EDUCATION

Three Capitol Mall

Little Rock, AR 72201

Web Site Address: <http://dwe.arkansas.gov>

CAREER AND TECHNICAL EDUCATION

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Room 401 (501) 682-1040
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Accountability and Funding

(<http://dwe.arkansas.gov/CTESCTEPerkinsInfo.htm>)

Room 407 (501) 682-1528

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Mary Ellen Koettel, Program Analyst

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Perkins and related federally funded programs
Career and technical education coordinators

Occupational Programs:

Office of Agricultural Science and Technology

(<http://dwe.arkansas.gov/Agriculture/ffa.htm>)

Room 501 (501) 682-2561

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Cluster Responsibility: Agriculture, Food & Natural Resources

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Cluster Responsibility: Agriculture, Food & Natural Resources	

PROGRAM APPROVAL PROCESS

If a program was **conditionally approved** during the previous year and one of the following actions apply the following year, then the district will receive the program status indicated.

ACTION	STATUS TO RECEIVE
Problems are corrected	FULL APPROVAL
Problems not corrected	Disapproval
Critical elements from previous year received and improvement plan not submitted	Disapproval

If a program had **full approval** during the previous year and one of the following actions apply the following year, then the district will receive the program status indicated.

ACTION	STATUS TO RECEIVE
No CTSO previous year	Conditional Approval
No program of study	Conditional Approval
No required foundations (reviewed by appropriate program area)	Conditional Approval
Core not offered every year	Conditional Approval
Meets all DWE standards	FULL APPROVAL

Program approval items reviewed during technical assistance visits and as information is available:

1. All report card items
 - A. Completers
 - B. Career and technical assessment
 - C. Academic attainment
 - D. Placement
 - E. Nontraditional numbers
2. Advisory councils and meeting minutes
3. Safety issues
4. Any item noted as lacking in technical assistance visit

2005-06 Career and Technical Course Codes

CLUSTER: AGRICULTURE, FOOD & NATURAL RESOURCES (all pathways)

491010 Advanced Animal Science

Credit: .5 Grade Levels: 9-12

This course is designed at the local level for specialized instruction as determined by the local advisory committee and administration in a specific area of animal science. Pre-requisites would be animal science.

Does course count in required 38 units and, if yes, how: Yes Career & Technical

Does course count in the 21 units required for graduation: Yes

Licensure required to teach this course: 010 Agriculture
218 Agricultural Sciences & Technology

491020 Agricultural Apprenticeship/Work-Based Learning

Credit: 1 Grade Levels: 11-12

This course provides for the work-based component of a supervised agriculture experience program with an agriculture employer. It provides the experiential learning concepts that are needed for successful employment.

Does course count in required 38 units and, if yes, how: Yes Career & Technical

Does course count in the 21 units required for graduation: Yes

Licensure required to teach this course: 010 Agriculture
218 Agricultural Sciences & Technology
604 Horticulture
605 Forestry

491030 Agricultural Business

Credit: .5 Grade Levels: 9-12

This course provides students with a basis for making effective decisions, setting goals, assessing and solving problems, evaluating the management of resources, and gaining skills useful in everyday life. FFA and SAEs will be covered as well.

Does course count in required 38 units and, if yes, how: Yes Career & Technical

Does course count in the 21 units required for graduation: Yes

Licensure required to teach this course: 010 Agriculture
218 Agricultural Sciences & Technology
604 Horticulture
605 Forestry

491040 Agricultural Electricity

Credit: .5 Grade Levels: 9-12

Students will cover electrical terms, careers, sources, tools, and practical wiring. Students will learn to read plans and wire according to plan. They will use hands-on activities, and safety will be stressed.

Does course count in required 38 units and, if yes, how: Yes Career & Technical

Does course count in the 21 units required for graduation: Yes

Licensure required to teach this course: 010 Agriculture
218 Agricultural Sciences & Technology

491050 Agricultural Graphics

Credit: .5 Grade Levels: 9-12

Students will prepare and read plans related to agricultural projects. They will learn to draw using hand drawing equipment, mechanical equipment, and computer-aided equipment/software. This course has a large amount of hands-on activities.

Does course count in required 38 units and, if yes, how: Yes Career & Technical

Does course count in the 21 units required for graduation: Yes

Licensure required to teach this course: 010 Agriculture
218 Agricultural Sciences & Technology

491060 Agricultural Marketing

Credit: .5 Grade Levels: 9-12

This course will cover all aspects of marketing agricultural products and services, from wholesale to retail, including futures markets, international marketing, and the role of agricultural products and services in the U.S. and world economies.

Does course count in required 38 units and, if yes, how: Yes Career & Technical

Does course count in the 21 units required for graduation: Yes

Licensure required to teach this course:

010	Agriculture
218	Agricultural Sciences & Technology
604	Horticulture
605	Forestry

491070 Agricultural Metals I

Credit: .5 Grade Levels: 9-12

This course covers safety, technical information, tool fitting, sheet metal, hot and cold metal work, as well as an introduction to oxyacetylene welding and cutting and arc welding. Safety practices and performance skills will be emphasized in each area.

Does course count in required 38 units and, if yes, how: Yes Career & Technical

Does course count in the 21 units required for graduation: Yes

Licensure required to teach this course:

010	Agriculture
218	Agricultural Sciences & Technology

491080 Agricultural Metals II

Credit: .5 Grade Levels: 9-12

This course will cover cold metal, hot metal, fabrication concepts, reading and implementing blueprints as they relate to metal work, arc welding, gas welding, MIG welding, TIG welding, plasma cutting, and careers related to metal work. Safety will be emphasized.

Does course count in required 38 units and, if yes, how: Yes Career & Technical

Does course count in the 21 units required for graduation: Yes

Licensure required to teach this course:

010	Agriculture
218	Agricultural Sciences & Technology

491090 Agricultural Surveying

Credit: .5 Grade Levels: 9-12

The course is a one-semester course of land surveying, land description, and construction. Surveying also covers GPS, GIS, FFA, and SAE.

Does course count in required 38 units and, if yes, how: Yes Career & Technical

Does course count in the 21 units required for graduation: Yes

Licensure required to teach this course:

010	Agriculture
218	Agricultural Sciences & Technology
605	Forestry

491100 Agriculture Mechanics I

Credit: .5 Grade Levels: 9-12

This course connects scientific principles with mechanical skills. This course will enhance the student's understanding of traditional areas of agriculture mechanics.

Does course count in required 38 units and, if yes, how: Yes Career & Technical

Does course count in the 21 units required for graduation: Yes

Licensure required to teach this course:

010	Agriculture
218	Agricultural Sciences & Technology

491110 Agriculture Mechanics II

Credit: .5 Grade Levels: 9-12

This course will emphasize agricultural technology, including such topics as electricity, internal combustion engines, metal technology, construction, and the development, role, and scope of mechanical technology in agriculture.

Does course count in required 38 units and, if yes, how: Yes Career & Technical

Does course count in the 21 units required for graduation: Yes

Licensure required to teach this course:

010	Agriculture
218	Agricultural Sciences & Technology

491120 Agriculture Power Systems I

Credit: .5 Grade Levels: 9-12

This course covers the basic principles of agricultural power (electrical and internal combustion), maintenance and repair of equipment, career opportunities, and safety.

Does course count in required 38 units and, if yes, how: Yes Career & Technical

Does course count in the 21 units required for graduation: Yes

Licensure required to teach this course: 010 Agriculture
218 Agricultural Sciences & Technology

491130 Agriculture Power Systems II

Credit: .5 Grade Levels: 9-12

This course is a follow-up course to Agriculture Power Systems I. It will focus on the technical areas of maintenance and repair of small engines, control and installation of electrical power, electronics, and repair and maintenance of agricultural machinery.

Does course count in required 38 units and, if yes, how: Yes Career & Technical

Does course count in the 21 units required for graduation: Yes

Licensure required to teach this course: 010 Agriculture
218 Agricultural Sciences & Technology

491140 Agriculture Science

Credit: .5 Grade Levels: 9-12

This course is a foundation course for all agriculture programs of study. Topics covered include general agriculture, FFA, leadership, record keeping, Supervised Agriculture Experiences, animal science, and plant science.

Does course count in required 38 units and, if yes, how: Yes Career & Technical

Does course count in the 21 units required for graduation: Yes

Licensure required to teach this course: 010 Agriculture
218 Agricultural Sciences & Technology
604 Horticulture
605 Forestry

491150 Agriculture Science & Technology

Credit: 1 Grade Levels: 9-12

This course is a foundation course for all agriculture programs of study. Topics covered include general agriculture, FFA, leadership, record keeping, Supervised Agricultural Experiences, animal science, plant science, soil science, and agricultural mechanics.

Does course count in required 38 units and, if yes, how: Yes Career & Technical

Does course count in the 21 units required for graduation: Yes

Licensure required to teach this course: 010 Agriculture
217 Agricultural Sciences & Technology
218 Agricultural Sciences & Technology

491160 Agriculture Structural Systems I

Credit: .5 Grade Levels: 9-12

Students will be introduced to basic practices used in farm building and construction of facilities for the farm. Topics include FFA, SAEs, safety, planning, tools, basic construction, and surveying.

Does course count in required 38 units and, if yes, how: Yes Career & Technical

Does course count in the 21 units required for graduation: Yes

Licensure required to teach this course: 010 Agriculture
218 Agricultural Sciences & Technology

491170 Agriculture Structural Systems II

Credit: .5 Grade Levels: 9-12

This course is a follow up to Agriculture Structures I. A more in-depth look will be given to the technical areas of the agriculture structural industry. Topics will include FFA, SAEs, safety, concrete and masonry structures, basic carpentry, plumbing, electricity, metal fabrication, and painting and finishing.

Does course count in required 38 units and, if yes, how: Yes Career & Technical

Does course count in the 21 units required for graduation: Yes

Licensure required to teach this course: 010 Agriculture
218 Agricultural Sciences & Technology

491180 Animal Sciences

Credit: .5 Grade Levels: 9-12

Topics covered include animal biotechnology, animal behavior, classification, consumer concerns, animal welfare, genetics, scientific selection, reproduction, growth and development, nutrition, meat science, and diseases.

Does course count in required 38 units and, if yes, how: Yes Career & Technical

Does course count in the 21 units required for graduation: Yes

Licensure required to teach this course: 010 Agriculture
218 Agricultural Sciences & Technology

491190 Aquaculture

Credit: .5 Grade Levels: 9-12

This course is the science of water farming. It includes the production and marketing of aquatic animals and plants.

Does course count in required 38 units and, if yes, how: Yes Career & Technical

Does course count in the 21 units required for graduation: Yes

Licensure required to teach this course: 010 Agriculture
218 Agricultural Sciences & Technology

491200 Biological Animal Science

Credit: .5 Grade Levels: 9-12

This course is a scientific approach to animal science using scientific principles and applied management practices. An emphasis on selection and industry review will be based on scientific data.

Does course count in required 38 units and, if yes, how: Yes Career & Technical

Does course count in the 21 units required for graduation: Yes

Licensure required to teach this course: 010 Agriculture
218 Agricultural Sciences & Technology

491210 Biological Plant Science

Credit: .5 Grade Levels: 9-12

This course is a scientific approach to plant science using scientific principles and applied management practices. An emphasis on selection and industry review will be based on scientific data.

Does course count in required 38 units and, if yes, how: Yes Career & Technical

Does course count in the 21 units required for graduation: Yes

Licensure required to teach this course: 010 Agriculture
218 Agricultural Sciences & Technology
604 Horticulture
605 Forestry

491370 DWE-Approved Agriculture

Credit: 1 Grade Levels: 9-12

This course is an individually approved course in agriculture submitted by district.

Does course count in required 38 units and, if yes, how: Yes Career & Technical

Does course count in the 21 units required for graduation: Yes

Licensure required to teach this course: 010 Agriculture
218 Agricultural Sciences & Technology

590050 DWE-Approved Agriculture

Credit: 1 Grade Levels: 9-12

This course is an individually approved course in agriculture submitted by district.

Does course count in required 38 units and, if yes, how: No

Does course count in the 21 units required for graduation: Yes

Licensure required to teach this course: 010 Agriculture
218 Agricultural Sciences & Technology

491320 DWE-Approved Meat Processing Laboratory

Credit: 1 Grade Levels: 9-12

This course is a laboratory-specific course designed to develop skill in the slaughter and processing of animals. The course emphasizes safety, sanitation, equipment care and maintenance, slaughter procedures, wholesale and retail meat fabrication, meat quality including quality and yield grade, preparation, and merchandising trends. Instruction will include career opportunities, leadership activities, aspects of HASSIP, and other practices related to the meat packing industry. Districts desiring to implement this course should request approval from the Agriculture Education Office.

Does course count in required 38 units and, if yes, how: Yes Career & Technical

Does course count in the 21 units required for graduation: Yes

Licensure required to teach this course: 010 Agriculture
218 Agricultural Sciences & Technology

491220 Entrepreneurship

Credit: .5 Grade Levels: 9-12

The course includes the ownership and management of a business to meet the market needs and make a profit. Risk management, ownership, partnership, and marketing are key aspects.

Does course count in required 38 units and, if yes, how: Yes Career & Technical

Does course count in the 21 units required for graduation: Yes

Licensure required to teach this course: 010 Agriculture
218 Agricultural Sciences & Technology
604 Horticulture
605 Forestry

491230 Environmental Resources

Credit: .5 Grade Levels: 9-12

This course focuses on environmental concerns related to soil, air, and water. Emphasis is placed on soil and water in relation to agricultural processes. Students will also investigate ways to conserve soil and water and prevent contamination.

Does course count in required 38 units and, if yes, how: Yes Career & Technical

Does course count in the 21 units required for graduation: Yes

Licensure required to teach this course: 010 Agriculture
218 Agricultural Sciences & Technology
605 Forestry

491240 Floriculture

Credit: .5 Grade Levels: 9-12

This course covers the principles of design, merchandising, careers, selection, storage, supplies, management practices, ownership, and employment in the floriculture industry.

Does course count in required 38 units and, if yes, how: Yes Career & Technical

Does course count in the 21 units required for graduation: Yes

Licensure required to teach this course: 010 Agriculture
218 Agricultural Sciences & Technology
604 Horticulture

491250 Food Science Technology

Credit: .5 Grade Levels: 9-12

This course examines the food industry in production, manufacturing/processing, distribution, and marketing. It also explores careers, consumer consumption, food safety, global commodities, and food companies.

Does course count in required 38 units and, if yes, how: Yes Career & Technical

Does course count in the 21 units required for graduation: Yes

Licensure required to teach this course: 010 Agriculture
218 Agricultural Sciences & Technology

491260 Forestry

Credit: .5 Grade Levels: 9-12

This course provides an overview of the forest industry and its importance to the economy of the nation. Tree identification, management practices, harvesting and marketing processes, and business applications are major topics. GPS and GIS are included.

Does course count in required 38 units and, if yes, how: Yes Career & Technical

Does course count in the 21 units required for graduation: Yes

Licensure required to teach this course: 010 Agriculture
218 Agricultural Sciences & Technology
605 Forestry

491270 Greenhouse Management

Credit: .5 Grade Levels: 9-12

This course covers greenhouse management practices, including structural considerations, plant propagation, pesticide use, and product marketing. The student will also receive ample hands-on practice.

Does course count in required 38 units and, if yes, how: Yes Career & Technical

Does course count in the 21 units required for graduation: Yes

Licensure required to teach this course:

010	Agriculture
218	Agricultural Sciences & Technology
604	Horticulture

491280 Intro to Horticultural Science

Credit: .5 Grade Levels: 9-12

This course covers basic plant systems, pest control, and the areas of greenhouse management, nursery, and landscaping and turf management. This course is recommended for those students interested in the horticulture program of study.

Does course count in required 38 units and, if yes, how: Yes Career & Technical

Does course count in the 21 units required for graduation: Yes

Licensure required to teach this course:

010	Agriculture
218	Agricultural Sciences & Technology
604	Horticulture

491300 Leadership & Communications

Credit: .5 Grade Levels: 9-12

Public speaking, parliamentary procedure, organization, delegation, oral communication, conflict resolution, business etiquette, and community service are major topics to assist students in development of their leadership skills for the future.

Does course count in required 38 units and, if yes, how: Yes Career & Technical

Does course count in the 21 units required for graduation: Yes

Licensure required to teach this course:

010	Agriculture
218	Agricultural Sciences & Technology
604	Horticulture
605	Forestry

491310 Managing Our Natural Resources

Credit: .5 Grade Levels: 9-12

Students will explore natural resources (soil, water, air, forests, energy, minerals and metals, and wildlife) and develop the knowledge and skills to use them wisely. Other issues include outdoor recreation, careers, and the environment.

Does course count in required 38 units and, if yes, how: Yes Career & Technical

Does course count in the 21 units required for graduation: Yes

Licensure required to teach this course:

010	Agriculture
218	Agricultural Sciences & Technology
605	Forestry

491330 Nursery/Landscape

Credit: .5 Grade Levels: 9-12

This course covers the production of plants, shrubs, and ornamental trees for transplanting to landscape designs. Propagation, designing plans, installation, maintenance, transportation, and careers are included in the curriculum. This course is approved for the Centerpoint School District only. Other districts must request approval prior to implementation.

Does course count in required 38 units and, if yes, how: Yes Career & Technical

Does course count in the 21 units required for graduation: Yes

Licensure required to teach this course:

010	Agriculture
218	Agricultural Sciences & Technology
604	Horticulture

491340 Plant Science

Credit: .5 Grade Levels: 9-12

This course covers the relationship between plants and people, plant morphology and physiology, plant production, the environment, soil, and other related areas.

Does course count in required 38 units and, if yes, how: Yes Career & Technical

Does course count in the 21 units required for graduation: Yes

Licensure required to teach this course:

010	Agriculture
218	Agricultural Sciences & Technology
604	Horticulture
605	Forestry

491350 Small Engine Technology

Credit: .5 Grade Levels: 9-12

The course examines the uses of small engines in all areas of agriculture. Selection, maintenance and repair, careers, and employability are major topics.

Does course count in required 38 units and, if yes, how: Yes Career & Technical

Does course count in the 21 units required for graduation: Yes

Licensure required to teach this course:

010	Agriculture
218	Agricultural Sciences & Technology
604	Horticulture
605	Forestry

491360 Turf Grass Management

Credit: .5 Grade Levels: 9-12

This course covers all aspects of turf grass management, including lawn care, turf production, golf course management, sports turf, irrigation, equipment, maintenance, and human relations.

Does course count in required 38 units and, if yes, how: Yes Career & Technical

Does course count in the 21 units required for graduation: Yes

Licensure required to teach this course:

010	Agriculture
218	Agricultural Sciences & Technology
604	Horticulture

COURSES ONLY: WORK-BASED LEARNING, SUPPORT, SPECIAL POPULATIONS, & MISCELLANEOUS COURSES

590110 DWE-Approved Career & Technical Education

Credit: .5 Grade Levels: 9-12

This is a specialized CTE course for which the district must submit a framework and receive approval to teach. The district must have a letter on file to use this course code.

Does course count in required 38 units and, if yes, how: No

Does course count in the 21 units required for graduation: Yes

Licensure required to teach this course: ANY

MIDDLE SCHOOL COURSES

399200 DWE-Approved Career & Technical Education

Credit: Grade Levels: 7-8

This is a specialized CTE course for which the district must submit a framework and receive approval to teach. The district must have a letter on file to use this course code.

Does course count in required 38 units and, if yes, how: No

Does course count in the 21 units required for graduation: No

Licensure required to teach this course: ANY

399030 Intro to World Agriculture Science

Credit: Grade Levels: 7-8

This is a foundation course for agriculture courses. Basic agriculture concepts are introduced, and students explore careers in the agriculture industry. Students will also be introduced to the FFA, leadership, and Supervised Agricultural Experiences.

Does course count in required 38 units and, if yes, how: No

Does course count in the 21 units required for graduation: No

Licensure required to teach this course:

010	Agriculture
217	Agricultural Sciences & Technology
218	Agricultural Sciences & Technology

399090 Leadership & Service Learning (7-8 grade)

Credit: Grade Levels: 7-8

This course emphasizes the importance of leadership skills, volunteerism, and professionalism in the development of personal qualities. It focuses on the benefits of community service, leadership roles, and civic responsibilities. Current technology is used to enhance communication skills and promote professionalism.

Does course count in required 38 units and, if yes, how: No

Does course count in the 21 units required for graduation: No

Licensure required to teach this course:

091	Vocational Home Economics
092	Middle School Home Economics
214	Family & Consumer Science
215	Family & Consumer Science

TECHNOLOGY STANDARDS

**COMPUTER SYSTEM FOR: MIDDLE SCHOOL
JR HIGH SCHOOL
HIGH SCHOOL
INSTRUCTOR/TEACHER**

LEVEL I

Pentium® 4 processor (or equivalent) 2.80GHz, 800 MHz, 512K cache, 512MB DDR RAM, 17" CTL, true flat panel color monitor or 17" CRT true flat screen monitor, integrated video graphics card, 40GB hard drive, 1.44MB 3.5-inch floppy drive, USB 2-button optical mouse with scroll, integrated (10/100/1000) network card, 52x32x52X DVD-RW or 48x or 52x CDRW-ROM, integrated sound blaster compatible, speakers w/headphones. Internet accessible.

AGRICULTURAL SCIENCE	BUSINESS/MARKETING	CAREER GUIDANCE
Agribusiness Systems	CT: Intro	Advertising Design
Power, Structural, & Tech Systems	Computer Business Apps.	Career Communications (Pilot)
Animal Systems	Finance	Career Orientation
Plant Systems (Biological)	Hospitality	Graphic Communications
Plant Systems (Horticulture)	Keyboarding	Internship
Natural Resources/Environmental Serv Syst	Management	Keystone
	Marketing Technology	Radio/TV Broadcasting
	Office Administration	Workplace Readiness
	Tourism	
	Word Processing I & II	
FAMILY & CONSUMER SCIENCES	SPECIAL POPULATIONS	TECHNICAL & PROFESSIONAL
Childcare Guidance, Mngmt., & Services	JAG	Automotive Service Technology
Cosmetology	PROVE	Aviation Mechanics
Culinary Arts	STRIVE	Collision Repair Technology
Education & Training		Computer Engineering
Family & Consumer Sciences		Construction Technology
Lodging Management		Diesel Mechanics
Food Production, Mngmt., & Services		Electronics
		Exploring Industrial Tech Ed.
		Furniture Manufacturing
		HVACR
		Industrial Equipment Maint.
		JROTC
		Major Appliance Repair
		Machine Tool Technology
		Medical Professions Education
		Physics in Context
		Power Equipment Technology
		Welding Technology

TECHNOLOGY STANDARDS

**COMPUTER SYSTEM FOR: PROGRAM SPECIFIC
INSTRUCTOR/TEACHER**

LEVEL II

Pentium® 4 processor (or equivalent) 3.20GHz, 800MHz, 512K cache, 1 GB DDR RAM, 17" CTL, LCD flat panel color display, integrated video graphics card, (2) 80GB hard drives, 1.44MB 3.5-inch floppy drive, USB 2-button optical mouse with scroll, integrated (10/100/1000) network card, 48X or 52X DVD+R, DVD writer 48X or 52X CD ROM, integrated sound blaster compatible, sSpeakers w/headphones. Internet accessible.

BUSINESS/MARKETING	TECHNICAL & PROFESSIONAL
Desktop Publishing	Criminal Justice
Multimedia	Drafting & Design
Programming	Geospatial Technology
	Pre-Engineering
	Gateway to Technology

OFFICE OF AGRICULTURAL SCIENCE AND TECHNOLOGY EDUCATION

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CAREER CLUSTER: AGRICULTURE, FOOD, AND NATURAL RESOURCES

The production, processing, marketing, distribution, financing, and development of agricultural commodities and resources, including food, fiber, wood products, natural resources, horticulture, and other plant and animal products/resources.

Program Description

Agricultural Science and Technology Education is an organized educational program designed to provide career exploration and technical preparation for students who are preparing for career success in the Agriculture, Food and Natural Resources Career Cluster. The knowledge and performance skills required for successful achievements and/or advancement in agricultural occupations constitute the central focus of the program.

Occupational Program

The Agriculture, Food and Natural Resources Career Cluster offers sequential career focus programs of study in pathways:

Each local education agency should plan a program(s) of study to meet the needs of students in the community. Each program teaching Agricultural Power, Structural, and Technical Systems must offer one additional program of study.

Student Organization

The career and technical student organization, Future Farmers of America (FFA), shall be an integral part of the agriculture education instructional program and shall follow the applicable guidelines, goals, objectives, and participate in activities of the state and National FFA Organization.

AGRICULTURE PREREQUISITES

COURSES	PREREQUISITE COURSE(S)
Advanced Animal Science	Animal Science
Agricultural Mechanics II	Agricultural Mechanics I
Agricultural Metals II	Agricultural Metals I
Agricultural Power II	Agricultural Power I
Agricultural Structures II	Agricultural Structures I
Biological Animal Science	Animal Science
Biological Plant Science	Plant Science

Programs of study (pathways):

Agribusiness Systems

Course Code	Core Requirements	Units of Credit	7 th	8 th	9 th	10 th	11 th	12 th
491030	Agricultural Business	.5			X	X	X	X
491060	Agricultural Marketing	.5			X	X	X	X
491150	Agriculture Science & Technology *	1			X	X	X	X

Power, Structural and Technical Systems (Agricultural)

Course Code	Core Requirements	Units of Credit	7 th	8 th	9 th	10 th	11 th	12 th
491100	Agricultural Mechanics I	.5			X	X	X	X
491110	Agricultural Mechanics II	.5			X	X	X	X
491150	Agriculture Science & Technology	1			X	X	X	X

Animal Systems

Course Code	Core Requirements	Units of Credit	7 th	8 th	9 th	10 th	11 th	12 th
491150	Agriculture Science & Technology *	1			X	X	X	X
491180	Animal Science	.5			X	X	X	X
491200	Biological Animal Science	.5			X	X	X	X

Plant Systems (Biological)

Course Code	Core Requirements	Units of Credit	7 th	8 th	9 th	10 th	11 th	12 th
491150	Agriculture Science & Technology *	1			X	X	X	X
491210	Biological Plant Science	.5			X	X	X	X
491340	Plant Science	.5			X	X	X	X

Plant Systems (Horticulture)

Course Code	Core Requirements	Units of Credit	7 th	8 th	9 th	10 th	11 th	12 th
491150	Agriculture Science & Technology *	1			X	X	X	X
491270	Greenhouse Management	.5			X	X	X	X
491280	Intro to Horticultural Science	.5			X	X	X	X

Natural Resource Systems/Environmental Service Systems

Course Code	Core Requirements	Units of Credit	7 th	8 th	9 th	10 th	11 th	12 th
491150	Agriculture Science & Technology *	1			X	X	X	X
491230	Environmental Resources	.5			X	X	X	X
491310	Managing Our Natural Resources	.5			X	X	X	X

* Agriculture Science & Technology may be replaced by Agriculture Science as a core course if the Agricultural Power, Structural, & Tech Systems program of study is not being offered.

AGRICULTURAL SCIENCE AND TECHNOLOGY COURSES:

Course Code	Elective Courses	Units of Credit	7 th	8 th	9 th	10 th	11 th	12 th
491010	Advanced Animal Science	.5			X	X	X	X
491020	Agriculture Apprenticeship/Work-Based Learning	1					X	X
491030	Agricultural Business	.5			X	X	X	X
491040	Agricultural Electricity	.5			X	X	X	X
491050	Agricultural Graphics	.5			X	X	X	X
491060	Agricultural Marketing	.5			X	X	X	X
491070	Agricultural Metals I	.5			X	X	X	X
491080	Agricultural Metals II	.5			X	X	X	X
491090	Agricultural Surveying	.5			X	X	X	X
491100	Agricultural Mechanics I	.5			X	X	X	X
491110	Agricultural Mechanics II	.5			X	X	X	X
491120	Agricultural Power Systems I	.5			X	X	X	X
491130	Agricultural Power Systems II	.5			X	X	X	X
491140	Agricultural Science	.5			X	X	X	X
491150	Agricultural Science & Technology	1			X	X	X	X
491160	Agricultural Structural Systems I	.5			X	X	X	X
491170	Agricultural Structural Systems II	.5			X	X	X	X
491180	Animal Science	.5			X	X	X	X
491190	Aquaculture	.5			X	X	X	X
491200	Biological Animal Science	.5			X	X	X	X
491210	Biological Plant Science	.5			X	X	X	X
491220	Entrepreneurship	.5			X	X	X	X
491230	Environmental Resources	.5			X	X	X	X
491240	Floriculture	.5			X	X	X	X
491250	Food Science Technology	.5			X	X	X	X
491260	Forestry	.5			X	X	X	X
491270	Greenhouse Management	.5			X	X	X	X
491280	Intro to Horticulture	.5			X	X	X	X
491300	Leadership & Communications	.5			X	X	X	X
491310	Managing Our Natural Resources	.5			X	X	X	X
491330	Nursery/Landscape	.5			X	X	X	X
491340	Plant Science	.5			X	X	X	X
491350	Small Engine Technology	.5			X	X	X	X
491360	Turf Grass Management	.5			X	X	X	X

Course Code	Special Elective Courses	Units of Credit	7 th	8 th	9 th	10 th	11 th	12 th
	Seek DWE prior approval before implementation							
491370	DWE-Approved Agriculture	1			X	X	X	X
590050	DWE-Approved Agriculture	1			X	X	X	X
491320	DWE-Approved Meat Processing Laboratory	1			X	X	X	X

Course Code	DWE Middle School Electives	Units of Credit	7 th	8 th	9 th	10 th	11 th	12 th
399030	Intro to World Agriculture Science	.5	X	X				

AGRICULTURAL SCIENCE AND TECHNOLOGY

CLUSTER: AGRICULTURE, FOOD, AND NATURAL RESOURCES

PATHWAY: AGRIBUSINESS SYSTEMS

PROGRAM OF STUDY: AGRIBUSINESS SYSTEMS

MINIMUM INSTRUCTIONAL EQUIPMENT AND SOFTWARE

Item No.	Item Name	Number per Dept.	Specifications & Descriptions
1	Computer System	20	See Technology Standards
2	Printer	5	

AGRICULTURAL SCIENCE AND TECHNOLOGY

CLUSTER: AGRICULTURE, FOOD, AND NATURAL RESOURCES

PATHWAY: PLANT SYSTEMS (HORTICULTURE)

PROGRAM OF STUDY: PLANT SYSTEMS (HORTICULTURE)

MINIMUM INSTRUCTIONAL EQUIPMENT AND SOFTWARE

Item No.	Item Name	Number per Dept.	Specifications & Descriptions
1	Greenhouse	1	Minimum of 1,800 sq. ft. with environmental system
2	Work tables	2	4' X 8'
3	Soil sterilizer	1	¼-yard capacity
4	Soil test kit	1	
5	Microscopes	10	10X, 40X objectives
6	Water test kit	1	Nitrate, phosphate, and alkaline
7	Tiller	1	5 hp.
8	Mower	1	
9	Grass trimmer	1	
10	Backpack blower	1	2 cycle
11	Table system for greenhouse	1	
12	Horticulture tool kit	1	
13	Plant/Flower models	Set	
14	Emergency shower	1	
15	Plant growth chart	1	
16	Microscope, compound	1	

AGRICULTURAL SCIENCE AND TECHNOLOGY

CLUSTER: AGRICULTURE, FOOD, AND NATURAL RESOURCES
 PATHWAY: POWER, STRUCTURAL, AND TECHNICAL SYSTEMS (Agricultural)
 PROGRAM OF STUDY: POWER, STRUCTURAL, AND TECHNICAL SYSTEMS (Agricultural)

MINIMUM INSTRUCTIONAL EQUIPMENT AND SOFTWARE

Item Number	Item Name	Number Needed	Specifications & Descriptions
1	Oxyacetylene welding outfit	2	Single-stage installation A manifold
2	Oxyacetylene welding tables	2	
3	Anvil	1	70 lb.
4	Grinder/Sander	1	7" disk
5	Bench grinder	1	1" X 7" 1/2 hp.
6	Arc welders	2	225 am. AC-DC
7	Mig welders	1	
8	Arc welding tables	2	36 X 36
9	Drill press	1	Floor model 1/2"
10	Band saw	1	14", 1/2 hp. 115 v
11	Drill, electric	1	3/8"
12	Drill, electric	1	1/2 reversing 5 amp/450 rpm
13	Electric handsaw	1	7"
14	Electric sander	1	4" belt
15	Saber saw	1	3"
16	Engine, air cool gas	2	4 cycle & 2 cycle
17	Micrometer inside/outside	1	
18	Air compressor	1	150 psi, 80-gal. tank
19	Gun, spray paint	1	1 qt.
20	Table saw	1	10", 2 hp.
21	Tap and die set	1	
22	Level, automatic package	1	15 minutes (1/4") damping - air, suspension ball bearing
23	Planer	1	18"
25	Acetylene welding tool pkg.	1	
26	Arc welding tool pkg.	1	
27	Sheet metal tool pkg.	1	
28	Plumbing	1	
29	Concrete tool pkg.	1	
30	Cold metal tool pkg.	1	
31	Woodworking tool pkg.	1	
32	Power machines tool pkg.	1	
33	Electricity tool package	1	
34	Small gas engines tool pkg.	1	
35	Surveying	1	
36	Agri graphics tool pkg.	1	
37	Eye protection cabinet	1	
38	Cabinets for each area	12	

Note: Same equipment is required regardless of class size.

AGRICULTURAL SCIENCE AND TECHNOLOGY

CLUSTER: AGRICULTURE, FOOD, AND NATURAL RESOURCES

PATHWAY: NATURAL RESOURCE SYSTEMS/ENVIRONMENTAL SERVICE SYSTEMS

PROGRAM OF STUDY: NATURAL RESOURCE SYSTEMS/ENVIRONMENTAL SERVICE SYSTEMS

MINIMUM INSTRUCTIONAL EQUIPMENT AND SOFTWARE

Item No.	Item Name	Number per Dept.	Specifications & Descriptions
1	Clinometer	5	
2	Altimeter	5	
3	Land measuring wheel	1	
4	Tree injector	1	
5	Drip torch	1	
6	Firefighting pump	1	
7	Increment borer	1	
8	Tree marking gun	5	Backpack, 2 Cycle
9	Mist blower	1	
10	Stereoscope	1	5" common field of view
11	Chainsaw	1	16", 2 cycle
12	Forestry instructional kit	1	
13	Safety equipment kit	1	
14	Wheeler caliper	1	
15	Relaskop	1	
16	Fire weather kit	1	
17	Compass	5	
18	GPS receiver	2	
19	Staff compass	1	
20	Laser level or automatic level	1	
21	Soil test kit	1	
22	Water test kit	1	

AGRICULTURAL SCIENCE AND TECHNOLOGY

CLUSTER: AGRICULTURE, FOOD, AND NATURAL RESOURCES

PATHWAY: PLANT SYSTEMS (Biological)

PROGRAM OF STUDY: PLANT SYSTEMS (Biological)

MINIMUM INSTRUCTIONAL EQUIPMENT AND SOFTWARE

Item No.	Item Name	Number Per Dept.	Specifications & Descriptions
1	Microscopes	10	10x, 40x objectives
2	Soil tester	1	
3	Water test kit	1	
4	Light meter	1	0-2000 foot candles
5	Environmental chamber	1	
6	Hydroponic table-top unit	1	Double unit
7	Indoor growing lab	1	Aluminum frame, timer on light, 4' adjustable fluorescent lights
8	Teaching microscope	1	
9	Air pollution test kit	1	
10	Deep soil corning tube	1	
11	Classroom aquaculture system	1	
12	Environmental data logger	1	
13	pH meter	1	

AGRICULTURAL SCIENCE AND TECHNOLOGY

CLUSTER: AGRICULTURE, FOOD, AND NATURAL RESOURCES

PATHWAY: ANIMAL SYSTEMS

PROGRAM OF STUDY: ANIMAL SYSTEMS

MINIMUM INSTRUCTIONAL EQUIPMENT AND SOFTWARE

Item No.	Item Name	Number Per Dept.	Specifications & Descriptions
1	Incubator, teaching unit	1	
2	Aquarium kit, ecosystem	1	
3	Refrigerator	1	
4	Microwave oven	1	
5	Food grinder	1	
6	Teaching microscope	1	
7	Air pollution test kit	1	
8	Deep soil corning tube	1	
9	Classroom aquaculture system	1	
10	Environmental data logger	1	
11	pH Meter	1	